Vocabulary Development in Young Children: Influence of Maternal Factors

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Abstract

Vocabulary is an essential area of development because the acquisition of vocabulary is key in the development of language, cognition, and academic achievement. While there is extensive research on the various influential factors of vocabulary development (e.g., instructional curriculum, family SES), the direct influence of maternal depression on a child's vocabulary development is not as well researched. This study examined whether maternal depressive symptoms were associated with child vocabulary acquisition during early childhood. Participants included 32 mother-child dyads, with varying levels of depressive symptoms. The mothers were at least 21 years of age and children were between 3 and 3.5 years of age. The vocabulary of the child and the mother were assessed using a standardized test (PPVT-IV). Maternal depressive symptoms were measured using the CES-D. Family income, used as an indicator of SES, maternal vocabulary, and child gender were included as control variables. A hierarchal regression analysis was conducted with the child's vocabulary as the dependent variable. The independent variables were entered into the analysis in three steps: 1) child sex, 2) family income, maternal education, maternal vocabulary and 2) maternal depressive symptoms. Findings of this study showed no correlation between maternal depressive symptoms and child vocabulary. It did however show strong correlation between family income and child vocabulary. Implications and future research are discussed.

Introduction

The development of vocabulary is crucial in learning other skills (Graves, 2011). Level of vocabulary has been associated with improved reading comprehension skills as well as improved oral ability and later academic success (Wise, Sevcik, Morris, Lovett, & Wolf, 2007; Walker, Greenwood, Hart, & Carta, 1994).Research focusing on vocabulary instruction development has shown that diverse reading and diversified vocabulary curricula are the key to helping students build a large vocabulary in school (Graves, 2011). These are elements typically practiced in a school environment but the acquisition of vocabulary begins long before children are of school age so the factors that influence development during early childhood are also important. It has been shown that there is a period of increased development, or a "spurt" that occurs in vocabulary around two or three years of age (Huttenlocher, Haight, Bryk, Seltzer, & Lyons, 1991). During the time of enhanced vocabulary growth, many children spend most of their time with their primary caregiver, usually the mother. It is important to understand what maternal factors contribute to the early development of vocabulary because of their role as the primary caregiver during these critical years.

Studies have shown that the socioeconomic status (SES) of the family is positively correlated to a child's vocabulary growth (Hart & Risley, 1995). Vocabulary growth is also encouraged by the amount of speech a child is exposed to (Huttenlocher et al., 1991). The amount the mother talks to her children is associated with SES; women in a higher SES tend to have a higher level of education and women with a higher level of education tend to talk to their children more (Hoff-Ginsberg, 1991). Mothers in higher SES also tend to use a more diverse vocabulary when talking to their children and this has been positively correlated with vocabulary growth (Pan, Rowe, Singer, & Snow, 2005). Therefore, we know that SES, word exposure, and

lexical diversity positively correlate to vocabulary development. There are other maternal factors that can influence vocabulary. Maternal depression has been found in influence a child's development (Brumley & Goodman, 1990). It can be inferred that maternal depression may also have an influence on the development of a child's vocabulary. There has been some research to show the maternal depression influences behaviors that are adverse to vocabulary development, such as increased harshness and lack of sensitivity (Breznitz & Sherman, 1987; Tourney, 2011). There are, however, very few studies that examine the link between maternal depression and child's vocabulary directly.

The aim of this study was to investigate the contribution of maternal factors to child vocabulary. Specifically, we 1) examined how maternal vocabulary, maternal education and SES associated with child vocabulary; and 2) explored whether maternal depression was associated with child's vocabulary over and above other maternal factors. In addition, child age and sex were considered in examining the links between maternal factors and child vocabulary.

Review of Related Literature

Vocabulary Development in Young Children

Research has shown there are factors that are associated with vocabulary. The amount of speech a child hears is positively related to vocabulary development (Huttenlocher et al., 1991). This refers to the amount of talking heard in the home, the amount of direct conversational interaction had with the child, the diversity of conversational settings and word choice, as well as the affect of the interaction. If the affect of the conversation is negative, it discourages the child from engaging in further conversations (Weissman, Paykel, & Klerman, 1972). In addition to affect, maternal responsiveness, consistency, harshness, and sensitivity are important. The

reciprocity in conversation can either encourage or discourage a child from engaging in further conversations (Dollaghan, 1999). If a child experiences harshness as a response to conversation, this too will discourage future interactions (Pungello, Iruka, Dotterer, Mills-Koonce, & Reznick, 2009). When the likelihood of conversation decreases, the exposure to speech will decrease. If a child is not responded to consistently when they make verbal pleas, this will discourage their word exposure as well.

There have also been some child characteristics that have been associated with vocabulary include gender and age(Bornstien, Haynes, & Painter, 1998; Pan et al., 2005). It has been postulated that girls develop vocabulary at a more accelerated rate compared to boys (Bornstien et al., 1998; Huttenlocher et al., 1991). Some researchers suggested that this gender gap does not actually exist or is narrowing. There is a time period in early childhood, typically between the ages of 3 and 4 that usually lasts 4 to 6 months in which the child's vocabulary experiences exponential growth (Huttenlocher, Haight et al., 1991).Development during this time is strongly influenced by the mother because she is most commonly the primary caregiver for the child (Feng, Shaw, Skuban, & Lane, 2007). Her behaviors will influence development. Anything that alters her behaviors; especially those that have been shown to be influential on vocabulary, are important to study. This is because vocabulary has been correlated to future academic performance (Walker, Greenwood, Hart, & Carta, 1994; Graves, 2011).

Maternal Depression

Maternal depression is becoming more common, with the rate of depression in adulthood twice as high for women when compared to men (Sohr-Preston, 2006). Feelings of sadness and discouragement, which are associated with the onset of depression, most commonly occur in the

early twenties, which coincides with child-bearing age for many women (Association, 1994). Research have shown that maternal characteristics influential on children's development and the early years of development for children are especially critical(Feng, et al., 2007). During these critical years, it is often the mother who spends the most time with the child and is thus very influential over the child's development through their interactions and relationship. Maternal depression has been correlated with altered parenting behaviors (Lovejoy, Graczyk, O'Hare, & Neuman, 2000). The correlation between the affected parenting style of depressed mothers and a child's development have been studied in the areas of social, emotional, and cognitive development (Feng et al., 2007; Lovejoy et al., 2000), although a majority of the research has focused on social and emotional areas. There is little research conducted in the field of cognitive development, and even less specifically concerning the effect maternal depression has on a child's vocabulary development.

Depressed mothers have been shown to be more hostile towards their children (Shaw, Sherrill, Huffman, Schonberg, Lukon, & Obrosky, 2006), less sensitive and responsive to the children's needs, lower in positive affect, and higher in negative affect (Feng, et al., 2007; Sohr-Preston, 2006). These deficits in maternal parenting behavior can negatively influence the mother-child relationship, which can have a detrimental impact on the development of the child. Maternal depressive symptoms have been correlated to specific deficits in communication which include slower conversation pace, less consistency, increased harshness, less sensitivity, and less reciprocal behavior (Breznitz & Sherman, 1987; Brumley & Goodman, 1990).

Sensitivity and negative behaviors, in particular, have been associated with vocabulary development (Pungello et al., 2009). Negative behaviors are described as intrusive or hostile interactions in which the mother tries to control the child's situation or attitude (Shaw, Sherrill,

Huffman, Schonberg, Lukon, & Obrosky, 2006; Tourney, 2011). These behaviors can often make interactions between the mother and child tense and anxious, which will not facilitate a child's learning (Breznitz & Sherman, 1987). A lack of sensitivity and responsiveness could be detrimental to a child's vocabulary development because of the lack of a reciprocal conversational relationship will limit vocabulary exposure (Weissman et al., 1972). Some of the most prominent deficits in a mother with depressive symptoms is their lack of sensitivity to their child's needs (Brumley & Goodman, 1990) and increased hostility (Shaw et al., 2006). Therefore, maternal depressive symptoms influence parenting style in a way that could be detrimental to vocabulary development in children.

Socioeconomic Status, Maternal Education, and Maternal Vocabulary

Rate of depression has been shown to be high among those with a low SES (Everson, Maty, Lynch, & Kaplan, 2002). Often times, low SES is related to a lack of resources, both monetary and social. The lack of resources can increase stress and lead to more depressive symptoms. When examining the relationship between maternal depression and vocabulary development, the level of SES must be taken into consideration. It is likely that the more depressed mothers will have a lower SES than the less depressed mothers.

Mothers with higher SES tend to have a higher level of education and engage in more conversation with their children than their lower SES counterparts. Their children tend to have larger, more diverse vocabularies (Dollaghan, 1999; Hart & Risley, 1995; Walker et al., 1994). Walker et al, showed that high SES mothers tended to talk more per unit of time, talk for longer periods of time, and use more words when they talked. Not only do time and quantity vary; the quality varies. Mothers with a higher SES tend to engage in conversation with their children in

multiple environments and tend to use a more diverse word choice, which allows the children to learn a variety of words in multiple settings (Hoff-Ginsberg, 1991; Dollaghan, 1999).

It has been shown that mothers with depression talk less to their children, use fewer words when they do talk to them, and do not engage in conversation in varied settings (Lovejoy et al., 2000), all of which limit the exposure that is so critical in vocabulary development. SES has also been shown to influence vocabulary. Hart and Risley (1995) found that children of professional families had vocabularies that far exceeded the vocabulary of children in working class families. Women in a higher SES tend to have a higher level of education than women in a low SES and indeed, the level of education attained by the mother has been shown to positively correlate with a child's vocabulary (Dollaghan, 1999). This suggests that the higher the level of education, the larger the vocabulary is with regards to the mother.

High SES is related to a higher maternal education, and thus higher maternal vocabulary (Dollaghan, 1999). Low SES is also related to an elevated rate of depression among women, especially mothers (Weissman et al., 1972). The elevated rate of depressive symptoms is correlated with parenting behaviors that negatively influence vocabulary development (Bornstien et al., 1998). Therefore, a family's level of SES is related to maternal depressive symptoms, vocabulary, and education, which are factors that have been associated with a child's vocabulary development.

Children's Age & Gender

While the timing of the difference, the rate of change, and the lasting effect of the difference are debated, there is thought to be a difference between the vocabulary girls and boys (Wise et al., 2007). Girls develop their vocabulary at a more accelerated pace than boys. Some

studies argue that there is no gender gap or that the gender gap is narrowing or closing all together (Hyde & Linn, 1988). However, other studies claim that girls do indeed develop vocabulary faster than boys; therefore the subject must be considered and controlled for in the current study (Huttenlocher et al., 1991).

Unlike gender, researchers in vocabulary development have agreed there is a period in early childhood, sometime typically between ages three and four, in which the child's vocabulary increases at a very rapid rate before leveling off (Bornstien et al., 1998; Wise et al., 2007; Walker et al., 1994). According to Bornstien et al. (1998) this is a very sensitive period in vocabulary growth which lasts, on average, four to six months and usually occurs between the ages of three and four.

Methods

Participants

Data for this study was drawn from a larger longitudinal study focusing on the development of attentional control and emotional regulations during early childhood conducted by Dr. Xin Feng. The main study aims to examine the developmental changes in attentional and emotional self-regulation among preschool-aged children of depressed and non-depressed mothers. A variety of contextual variables are assessed (e.g. family SES, maternal childrearing stress). Children's vocabulary is also assessed as a developmental outcome. The mothers' vocabulary, which was not included in the main study, was assessed and included as a predictor of child vocabulary development as well.

In this study, children's vocabulary development and its association with maternal characteristics was examined. Maternal depressive symptoms, maternal education, income, and

vocabulary were the predictors examined in this study. Child's gender was included in this study as control variables.

Participants consisted of 32 mother-child dyads with varying levels of depressive symptoms. The age of the children in the sample was on average 3.19 years old (SD = .16 years). Mothers were on average 31 years old (SD = 5.00 years)**.** Maternal education and family income as well as child sex were measured using a self-report demographic questionnaire. There were 16 boys and 16 girls that participated in the study. All of the mothers had completed some college, while 38% (*n* = 12) had their Bachelor degree and 34% (*n* = 11) had their graduate degree or professional training**.** While the most frequent income cluster represented was the $100,000-$149,000 bracket with 22% (*n* = 7) of the sample, 59% (18) of the sample made $60,000 or less. Both maternal vocabulary and child vocabulary were measured using the Peabody Picture Vocabulary Test 4th Edition (PPVT-IV; Dunn & Dunn, 1997). Depression was measured with both the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977).

Measures

Center for Epidemiological Studies Depression Scale (CES-D). The CES-D (Radloff, 1977) is a self-report measure of depression symptoms that has high reliability (n = .85-.90). It is comprised of 20 items reflecting major dimensions of depression. The questions are drawn from questions used on previous reliable depression assessments. The mothers depressive symptoms were measured using the CES-D.

Peabody Picture Vocabulary Test IV (PPVT-IV). The PPVT-IV (Dunn & Dunn, 1997) is a norm referenced instrument measuring vocabulary with excellent reliability (n > .90). The PPVT consists of different modules that are used to assess vocabulary of individuals of different

ages (from 2 years 6 months to 90 years of age). Both children's receptive vocabulary and mothers' receptive vocabulary were assessed using this instrument. It includes a 228-item booklet which is divided into 19 sets, with 12 items per set. Administration of the test usually lasts 15-20 minutes.

The Demographic Questionnaire. The demographic questionnaire includes questions about family, income, parents' occupation status and educational attainment, marital status, ages of the child and mother, and childcare arrangements and support. The SES of family was indexed using the income of the family.

Data Analysis

Descriptive statistics (e.g. means, standard deviation) and bivariate correlations of the study variables were computed. To address the research questions, a hierarchical regression analysis was conducted with child vocabulary as the dependent variable. The independent variables were entered into the analysis in three steps. In the first two steps, the control variables were entered with child sex as step one and maternal traits (income, education, and vocabulary) entered in step 2. The association with child vocabulary was examined. In the third step, maternal depression was entered into the regression analysis. In this way, whether maternal variables contribute to the development of children's vocabulary over and above the effects of gender was examined.

Results

Descriptive Statistics and Correlations

In Table 1 the descriptive statistics of the variables are presented. The mother and child age, respectively, were 31.28 and 3.19 years old. On the CES-D, the score needed to be considered depressed is16. The average score for the CES-D was 9.50 (*SD* = 9.24). Six of the mothers had CES-D scores that were above the clinical cut off of 16 (Radloff, 1977). The average standard score range for the PPVT-IV is 85-115. The average maternal score of 104.50 (*SD*=12.00) and the average child score of 109.66 (*SD*=14.77) fall within this range.

Bivariate correlations of study variables are presented in Table 2. Maternal education and maternal vocabulary were related with a correlation of .43 ($p = .01$). Maternal education was also positively correlated with family income at .41 ($p = .02$). Family income was associated with maternal depressive symptoms as well as child vocabulary, with a correlation of -.57 ($p = .001$). Therefore, the higher the family income, the less likely a mother was to exhibit depressive symptoms. This means that the depressive symptoms of low income mothers are higher than those of a higher income. Higher family income was also related to higher child vocabulary with a correlation of **.**55 ($p = .001$). The correlation between maternal depressive symptoms and child vocabulary was not statistically significant, $r = -.25$ ($p = .183$).

Regression Analysis

In step 1 of the regression analysis, child sex was entered to account for any gender differences in vocabulary. Child sex was not associated with vocabulary, only 3.04% of the variance in child vocabulary was accounted for by child sex, $\Delta F = 1.01$, *ns*. In step 2 the other control variables of family income, maternal education and maternal vocabulary were entered in the analysis. Twenty-eight percent of the variance was accounted for by these variables with a $\Delta F = 3.49$ $p = .03$. Family income was the only significant predictor of child vocabulary

development (β = .56, *p* =.004). Maternal education (β = -.05, *p* = .83) and maternal vocabulary (β = .01, *p* = .96) were not significant predictors. Maternal depressive symptoms were entered in the third step. With all other maternal factors and covariates controlled, maternal depressive symptoms were not associated with child vocabulary (β = .11, p = .59). Only 1% of the variance in child vocabulary was accounted for by the addition of maternal depressive symptoms. Family income remained significantly related to child vocabulary (β = .63, *p* = .01) after maternal depressive symptoms was entered. Therefore, the hypothesis that suggests maternal depressive symptoms have a negative correlation with child vocabulary was not supported.

Discussion

The primary goal of our study was to examine the association between maternal depressive symptoms and child vocabulary. Our data did not show an association between these two variables. We also examined the association between several maternal factors, including SES (indexed as family income), maternal vocabulary and maternal education. There was no association between the dependent variable of child vocabulary and maternal education or maternal vocabulary; however, there was an association between family income and child vocabulary—children from high SES families acquired a larger vocabulary.

Maternal Depression and Vocabulary

There are several explanations for why our study did not show any relationship between maternal depression and child vocabulary. One reason for this could be our sample size. In addition, only 6 of the 32 mothers had CES-D scores above the clinical cut off (16), while majority had low CES-D scores. The restricted range of variation in depressive symptoms may also attenuate the association between maternal depressive symptoms and child vocabulary.

With a large sample size, a larger range of variation in maternal depressive symptoms, or more depressed mothers in the sample, the association between maternal depression and child vocabulary might be more likely to be identified.

Second, it is plausible that the association between maternal depressive symptoms and child vocabulary development was mediated or moderated by specific parenting behavior or patterns of mother-child interaction. In our study, maternal depressive symptoms were measured used a self-report survey. Maternal depressive symptoms might exert an impact on child vocabulary through how she interacts with the child. Previous research has shown that parenting behaviors that are altered by depression influence child development (Breznitz & Sherman, 1987). The influence of maternal depression on child vocabulary may vary according to the level of deficits in maternal parenting behavior, such that maternal depressive symptoms matters only when mothers also display deficits in parenting behavior, such as a lack of responsiveness or increased harshness, that negatively impact child language development.

Another reason for the lack of association between maternal depressive symptoms and child vocabulary could be the influence of income. In our study, there was a strong correlation between maternal depressive symptoms and family income, which was due, in part, to the small and biased sample. It could be that the relationship between maternal depressive symptoms and child vocabulary were accounted for by family income.

Finally, in light of the previous findings suggesting the relations between parenting behavior and child language development, it is possible that deficits in parenting behavior associated with maternal depression are better predictors of child vocabulary acquisition than maternal depression itself. Breznitz and Sherman (1987) showed that the slower pace and

shorter duration of conversations between depressed mothers and children did negatively affect a child's vocabulary development. Decreased responsiveness of depressed mothers has also been correlated with child vocabulary development (Pungello et al., 2009). In addition, depressed mothers have been shown to be harsher and more neglecting in their parenting (Tourney, 2011). This type of parenting can mean that conversations can be negative in affect and shorter, which are qualities that have been correlated to vocabulary development (Bornstien et al., 1998).

The results of this study show the importance of carefully measuring what depression influences. Depression is a very broad disorder that can be influenced by a variety of triggers from low income to a situational event. The factors influenced by this disease are also very broad but the most notably affected are relationships. The lack of relationship between a simple depression measure and child vocabulary reinforces the idea that the behaviors affected by depression are a more important predictor of the effects of depression. Using the altered behaviors in both research and educational settings could improve the impact of interventions designed to protect against the negative influence of depression.

Influence of Income

Results from our study were consistent with previous research relating socioeconomic status and child vocabulary (Hart & Risley, 1995; Breznitz & Sherman, 1987). Across disciplines, SES has been shown to be a strong indicator of various child development outcomes (Walker et al., 1994). One possible reason for the strong correlation is the broad nature of SES, how it is measured, and what it affects. SES is a measure of social and economic factors within a given society. It is usually measured using some combination of income, education, occupation, and location of residence. Sometimes just one of these factors can be used as a predictor, as in

our study where income was the measure of SES. The effect of SES has been studied in correlation with everything from diet, health and academic outcomes to familial relationships and personal coping techniques.

The results of our study further highlight the importance of SES. Even with our small sample size, the association was statiscally significant. The strength of SES as a developmental indicator is also reinforced by the fact that this study used only one variable, family income, as a measure. It is possible that if other measures such as occupation were included that the relationship would be even more significant. This data contributes to the existing body of literature about the interaction between SES and vocabulary development (Hart & Risley, 1995; Hoff-Ginsberg, 1991; Pan et al, 2005). SES is, therefore, an important indicatory of development.

Family income was also related to maternal depressive symptoms. Often those with a lower income tend to experience or perceive a lack of monetary, social and/or emotional resources (Everson et al., 2002). This lack of resources can tend to elicit feelings of sadness, frustration, discouragement, and stress. Many of these feelings are synonymous with those experienced by people with depression (Association, 1994). This lack of resources can make daily living difficult and can elevate the stress level of normal everyday tasks, such as providing food for the family or car maintenance. This elevated stress related to everyday tasks can exacerbate depression. In addition, those with a lack of resources tend to experience even more stress when major life stressors occur; such as job loss or a natural disaster. Those with a lower SES may not have the monetary and social resources to cope with these events and will experience more negative feelings as a result.

Family income, our measure of SES, was also associated with maternal education. This too is consistent with prior research (Walker et al., 1994). Explanations for this include the fact that women with higher income tend to have the monetary resources that enable them to attain higher education. Conversely, women who achieve a higher level of education tend to work in higher paying professions, thus increasing their income. These explanations highlight the circular relationship between education and income.

Family income was correlated with several of our study variables including the dependent variable of child vocabulary. This high correlation rate indicates that family income is a strong indicator of various attributes. One important application of these results could be using the factors known to be associated with a given SES in interventions for children already identified as needing assistance. Many children with a low SES share common traits that relate to learning disadvantages such as a lack of resources, language barriers, and lack of parental involvement. Using this knowledge, interventions can be designed to teach students and families about various resources. Some of the most effective resources for a low SES family could be things like English classes or tutoring, help in learning how to study and help your children study, as well as awareness of community resources such as libraries and groups.

Maternal Education and Vocabulary

Maternal education was also associated with maternal vocabulary. To explain this, consider the fact that amount of speech exposure, lexical diversity, and conversational location diversity positively correlate to vocabulary development (Bornstien et al., 1998). These factors apply to development across the lifespan. Having attained a higher level of education, mothers have typically been a variety of classrooms, been exposed to vocabulary associated with specific

subjects and interacted with many classmates and professors, all of which will enhance her vocabulary, thus the positive correlation between maternal education and vocabulary.

Higher maternal education was also related to a higher family income. Family income was associated with a higher child vocabulary but child vocabulary was not associated with maternal education or maternal vocabulary. It is very interesting that there was not an association between these variables. What reasons could explain this?

Women who achieve higher levels of education are typically more involved in a career or profession than their counterparts with a lower education (Hoff-Ginsberg, 1991). Perhaps the higher level of career involvement means than the mother does not spend as much time with her child due to the demands of the career. The lack of interaction time between the mother and child would limit the association of their characteristics.

Another factor that could influential is the age of the mother. While some mothers may have a higher education, this could be because they are currently in school. Going to school would limit the amount of interaction with their children so a higher education level would not associated with child vocabulary because mothers are not around their children as much. School can also be very demanding, especially if you are also responsible for a young child. This increase in stress could manifest in negative parenting behaviors, such as increased harshness or a lack of sensitivity, which are detrimental to child vocabulary (Weissman et al., 1972). The child would also be in some type of care-giving situation, whether it be a family member or professional facility, while the mother is in school. This would support the relation of vocabulary with income because the higher the family income, the more high quality childcare can be afforded.

Scaffolding could be another explanation (Vygotsky, 1978). In order for a child to learn something, it has to be within their zone of proximal development (ZPD). This means that the material is not so easy they need no assistance but not so difficult that it has to be done for them. Ideally, in the ZPD children can achieve the task set before them, initially with some adult assistance, and then gradually on their own. If a mother has a higher level of education, she may use her advanced education in interactions with her child. Her word choice and conversation topics could be beyond the ZPD of the child, meaning that it would not help them learn. If a child is not learning, than their vocabulary will not develop. This would also explain the lack of association between maternal vocabulary and a child's vocabulary. If her vocabulary is very advanced, the child may not be able to understand it. Eventually, the child vocabulary will advance and the mother vocabulary will come into the child's ZPD, but during the developmental period of the study, early childhood, it may have still been too difficult and thus had no influence.

In applying our results, an effective way to enhance a child's vocabulary would be teaching tools. While a mother may have an advanced education and vocabulary, she may not be familiar with the techniques use to gradually use this resources to effectively advance their child's development. Giving a mother books and workshops that show her how to engage a child's ZPD can help her make a more positive impact on the child's development. Also, teaching her what level of vocabulary to use with her children and how to gradually level up will make a more effective use of the skills the mother already possess.

Measures

In discussion of the study findings, it is important to critique the measures selected for the study. While all measures in the study are widely-used, there could be improvement in their breadth and depth of characteristic measured. The PPVT-IV, while highly reliable, is a measure mainly of receptive vocabulary and often used most extensively in the elementary school setting. During the administration of the tool, the study participant never has to use speech; they can answer the questions by pointing or saying a number 1 through 4. The instrument is designed this way so that it can be used with children who may not be able to respond verbally. However, for the purposes of examining vocabulary, it might be beneficial to also use an instrument that measures expressive vocabulary as well.

Implications

The results of our study have several implications that can be applied to various settings. Most importantly is the idea that it is altered parenting behaviors and not simply parenting characteristics that are the most significant with regard to the child's development. The mother especially has a strong influence on development (Feng et al., 2007). However, the results of this study did not directly correlate a maternal characteristic, namely depression, with the child's development despite the fact that other studies have shown a correlation (Pan et al., 2005; Weissman et al., 1972). The difference between the current and previous studies is the fact that in those studies, the impact on child development was measured through specific behaviors that were altered. In the current study the measure of depressive symptoms was used and not the behaviors that it altered.

In current practice this is very useful. For therapists and other professionals providing interventions for children lagging in development due to parental deficits, these results could be

used to further highlight the importance of parenting behaviors. It is probably more effective to approach the child of a depressed mother with information about the mothers parenting behaviors than just simply knowing that they are depressed. Each person can manifest depression differently and on a different level. This would mean that they way a professional would interact with each child would be different even though all the mothers are depressed.

When discussing the professional uses of this data it is important to reinforce the strength of family income, and by extension SES, as a predictor of development. Our results showed that family income was the only factor correlated with child vocabulary and it was also associated with other variables such as maternal depression and education. The multiple relationships involving family income highlight its importance as a predictor and thus its significance in practice.

Future Research

In addition to the current applications of the result findings, the information provided by this study can be used to enhance future research. Research is very important in the area of vocabulary development because vocabulary has been associated with achievement later in school (Graves, 2011). Despite the importance of vocabulary, it is a difficult subject to measure because vocabulary development from person to person varies according to host of characteristics (Bornstien et al., 1998). Research on the affects of maternal depression is also important. The mother is very influential on child development (Feng et al., 2007), especially during the early childhood years when they are most often the primary caregiver.

Future studies examining the association between maternal depressive symptoms and vocabulary could adopt one of the following approaches. First, studies could include a clinical

sample of depressed mothers. Second, researchers should focus on the altered parenting behaviors that affect development. Previous research focusing on the parenting behaviors altered by depression that influence vocabulary have showed a correlation (Breznitz & Sherman, 1987; Lovejoy et al., 2000; Weissman et al., 1972). In addition, in order to measure the parenting behaviors altered by depression, a study would need to use some type of observation for accuracy. This is due to the fact that sometimes study participants will misreport survey information if they fear that it puts them in an unfavorable light due to what is called a social desirability bias. For example, a mother may not report that she is less sensitive to her child because it is a negative quality.

Child vocabulary should also be studied from a variety of perspectives. Our study measured only receptive vocabulary. To more accurately gauge what a child's vocabulary is, both receptive and expressive vocabulary should be measured. It could also benefit a study focusing on vocabulary development to measure vocabulary at multiple different time points. This would provide more data and draw a clearer picture of child linguistic abilities.

References

Association, A. P. (1994). *Diagnostic and statistical manual of mental disorders (4th ed.).* Washington, D.C. : Author.

Beck, A. T., Steer, R. A., & Ranieri, W. (1996). Comprison of Beck depression inventories- IA and -II in psychiatric outpatients. *Journal of personality assessment , 67,* 588-597.

Bornstien, M. H., Haynes, M. O., & Painter, K. M. (1998). Sources of child vocabulary competence: A multivariate model. *Journal of Child Language , 25,* 367-393.

Breznitz, Z., & Sherman, T. (1987). Speech Patterning of Natural Discourse of Well and Depressed Mothers and their Yound Children. *Child Development ,* 395-400.

Brumley, H. E., & Goodman, S. H. (1990). Schizophrenia and depressed mothers: Relational deficitsi in parenting. *Developmental Pyschology , 26,* 31-39.

Crnic, K. A., Greenberg, M. T., Ragozin, A. S., Robinson, N. M., & Basham, R. B. (1983). Effects of stress and social support on mothers and premature and full-term infants. *Child Development , 57,* 209-217.

Dollaghan, C. (1999). Maternal Education and Measures of Early Speech and Language. *Journal of Speech, Language, and Hearing Research ,* 1432-1443.

Dunn, L. M., & Dunn, L. M. (1997). *Peabody Picture Vocabulary Test- Third Edition.* Circle Pines, MN: American Guidance Service.

Everson, S. A., Maty, S. C., Lynch, J. W., & Kaplan, G. A. (2002). Epidemiological evidence for the relation between socioeconomic status and depression, obesity, and diabetes. *Journal of Psychosomatic Research , 53,* 891-895.

Feng, X., Shaw, Skuban, & Lane. (2007). Emotional exchange in mother-child dyads: Stability, mutal influence, and associstions with maternal depression and child problem behvaior. *Journal of family Psychology , 21* (4), 714-725.

Graves, M. F. (2011). Ask the expert. *The Reading Teacher , 64* (7), 541.

Hart, B., & Risley, T. R. (1995). *Meaningful differences in the everyday experience of young american children.* Baltimore: Paul H. Brookes Publishing Co.

Hoff-Ginsberg, E. (1991). Mother-child conversation in different social classes and communicative settings. *Child Development , 62,* 782-796.

Huttenlocher, J., Haight, W., Bryk, A., Seltzer, M., & Lyons, T. (1991). Early vocabulary growth: A relation to language input and gender. *Developmental Psychology , 27* (2), 236-248.

Lovejoy, M. C., Graczyk, P. A., O'Hare, E., & Neuman, G. (2000). Maternal depression and parenting behavior: A meta-analytic review. *Clincal Psychology Review , 20* (5), 561-592.

Pan, B. A., Rowe, M. L., Singer, J. D., & Snow, C. E. (2005). Maternal Correlates of Growth in Toddler Vocabulary Production in Low0Income Families. *Child Development* , 763-782.

Pungello, E. P., Iruka, I. U., Dotterer, A. M., Mills-Koonce, R., & Reznick, J. S. (2009). The effects of socioeconomic status, race, and parenting on language development in early childhood. *Developmental Psychology , 45* (2), 544-557.

Radloff, L. S. (1977). The CED-D scale: A self-report depression scale for research in the gneral population. *Applied Psychological Measurement , 1*, 385-401.

Shaw, D. S., Sherrill, J., Huffman, D., Schonberg, M., Lukon, J., & Obrosky, D. (2006). Responsivity to offspring's expression of emotion among childhood-onset depressed mothers. *Journal of Clinical and Adolscent Psychology , 35* (4), 490-503.

Sohr-Preston, S. L. (2006). Implications of timing of maternal depressve symptomsof early cognitive and language development. *Clincal Child and Family Psychology Review , 9* (1), 65-83.

Tourney, K. (2011). Labored love: Examining the link between maternal depression and parenting behaviors. *Social Science Research , 40,* 399-415.

Walker, D., Greenwood, C., Hart, B., & Carta, J. (1994). Prediction of School Outcomes Based on Early Language Production and Socioeconomic Factors. *Child Development* , 606-621.

Weissman, M. M., Paykel, E. S., & Klerman, G. L. (1972). The depressed woman as a mother. *Social Psychiatry , 7* (2), 98-108.

Wise, J. C., Sevcik, R. A., Morris, R. D., Lovett, M. W., & Wolf, M. (2007). The relationships amond receptive and expressive vocabulary, listening comprehension, pre-reading skills, word identification skills, and reading comprehension skills by children with reading disabilties. *Journal of Speech, Language, and Hearing Research , 50,* 1093-1109.

Table 1. Descriptive Statistics

Variables	**%**	**N**	***M***	***SD***	**Range**
Child Age		32	3.19	.15	3-3.5
Child Vocabulary		32	109.66	14.77	79-139
Maternal Age		32	31.28	5.00	23-46
Maternal Depression		32	9.50	9.24	0-31
Maternal Vocabulary		32	104.50	12.00	82-136
Maternal Education					
Some College	.28	9			
Bachelor Degree	.38	12			
Graduate or Professional	.34	11			
Child Sex					
Male	.50	16			
Female	.50	16			
Income					
$10,000-$19,999	.16	5			
$20,000-$29,999	.10	3			

$30,000-$39,999	.07	2			
$40,000-$49,999	.13	4			
$50,000-$59,999	.13	4			
$70,000-$79,999	.07	2			
$80,000-$89,999	.09	3			
$100,000-$149,999	.22	7			
$150,000 or more	.06	2			

Table 2. Correlations of Study Variables

Correlation Statistics						
Variables	**1**	**2**	**3**	**4**	**5**	**6**
1. Child Sex	1					
2. Income	-.28	1				
3. Maternal Education	-.40*	.41*	1			
4. Maternal Vocabulary	.21	.16	.43*	1		
5. Maternal Depression	.20	.57**	-.16	-.06	1	
6. Child Vocabulary	-.20	.55**	.20	.07	-.25	1

Table 3. Hierarchal Regression Analysis

Variables	B	SE B	β	Δ R^2	ΔF	Sig.	df
Step 1				.03	1.01	.32	1, 29
Child Sex	-5.38	5.36	-.18				
Step 2				.38	3.49	.03	3, 26
Child Sex	-1.23	6.00	-.04				
Income	2.34	.75	.56				
Maternal Education	-.90	4.12	-.05				
Maternal Vocabulary	.01	.25	.01				
Step 3				.01	.306	.59	1, 25
Child Sex	-1.23	6.08	-.04				
Income	2.63	.92	.63				
Maternal Education	-.94	4.18	-.05				
Maternal Vocabulary	-.01	.26	-.01				
Maternal Depression	.18	.33	.11				